

TEN YEARS OF COOPERATION BETWEEN CZECHOSLOVAK AND CUBAN PARASITOLOGISTS

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After the victory of the revolution in 1959, which paved the way for the full development of the Cuban society including the creative science, a preparative commission of the Cuban Academy of Sciences was founded and new scientific institutes and institutions, new universities and faculties were constructed in the province. In this way was created an organization structure and basis for a wide development of all scientific disciplines, of both theoretical and applied research. An important impetus in the development of biological sciences in Cuba was the agreement on the cooperation between the Czechoslovak Academy of Sciences and Cuban Academy of Sciences concluded in 1964. On the basis of this document, different branches of biological sciences widely developed in an initiative and fruitful cooperation. Many important results, both theoretical and applicable in practice, were achieved especially in parasitology.

The cooperation was centred in the Institute of Parasitology of the Czechoslovak Academy of Sciences and Institute of Helminthology of the Slovak Academy of Sciences for the Czechoslovak part and Biological (now Zoological) Institute of the Cuban Academy of Sciences for the Cuban part. The parasitology has developed in Cuba not only at the Academy of Sciences, but also at biological and veterinary faculties and many other institutions as Combinado Avícola Nacional and others. Even here the Czech and Slovak parasitologists, veterinarians and biologists have worked together with their Cuban colleagues.

During the past ten years 22 parasitologists of the Czechoslovak Academy of Sciences and Slovak Academy of Sciences, as well as workers of other institutions, participated in the research work of the Cuban Academy of Sciences. At the same time, 15 Cuban parasitologists visited Czechoslovakia; some of them defended their theses and obtained high scientific degrees during their stay in our country. When evaluating the results of this ten years' cooperation in parasitology we may state with full responsibility that the basic orientation of the research and its planned realization were quite correct. The aim of the first stage was a detailed list of parasites of vertebrates from Cuba, both domestic and free-living. During the following stage, complex ecological and epizootological studies of main parasitoses of domestic animals were planned and carried out in the large-scale and small-scale breeding, and effective methods of prevention and chemoprophylaxis were worked out.

The amount and scale of the joint research work is at least partly expressed in the bibliographic survey of original scientific papers published during the ten-years'

period. The list comprises 198 papers by Czech, Slovak and Cuban parasitologists, which were published by the end of 1974 and reported on the results of the Czechoslovak-Cuban cooperation.

In protozoology, the basic data on the incidence of most frequent and most pathogenic protozoan infections in domestic animals were obtained. A special attention was paid to blood protozoans and haemosporidia (3—5, 7—12), which are important parasites of cattle, especially of imported thoroughbred races. Also the partial studies devoted to coccidiosis of cattle (1) and endemic rodents of the genus *Capromys* (6) should be mentioned. For the control of rabbit coccidiosis, which is a disease of economic importance, a practical method of prevention was worked out, applicable in large-scale breeding. Of interest are also the data on the occurrence of toxoplasmosis in rabbits and cattle reared in Cuba (2) and unpublished results of the research of trichomoniasis of cattle caused by a parasitic flagellate *Tritrichomonas foetus*.

A wide research was effected in the field of helminthology, directed in the first stage to the study of helminth fauna of free-living and domestic vertebrates. The material of helminths (and also ectoparasites) was collected during the expeditions of the Cuban Academy of Sciences into all provinces of Cuba, the islands Isla de Pinos, Cayo Largo, Cayo Cantiles and other small islands in the Gulf of Mexico and the Caribbean Sea. The papers of systematical-faunistical character contain a wealth of information on helminths of practically all groups of definitive hosts. Of primary importance are the studies of helminth fauna of freshwater fishes (53, 128). The knowledge of helminth fauna of Cuban amphibia, especially of the genera *Eleutherodactylus*, *Bufo* and *Hyla* (33, 35, 53, 58), was considerably complemented and also reptilian hosts of helminths were dealt with in several papers: helminth fauna of the turtle *Pseudemys decussata* (54), the crocodiles *Crocodylus rhombifer* and *C. acutus* (88) and especially the nematode fauna of reptilians of the families Iguanidae, Gekkonidae and others (40—44, 80, 81, 147). The helminth fauna of Cuban snakes has been dealt with in two papers (39, 61).

Much information has also been gathered during the investigation of helminth fauna of free-living birds. Many of these hosts were examined for helminths for the first time. The papers concerning the helminths of the classes Trematoda (84, 87, 105, 107, 109), Cestodea (110, 139, 140, 147) and Nematoda (13—16, 18, 21, 22, 24, 32, 45, 51, 52, 147) present data on helminths of almost all orders of birds of Cuba, both migratory and non-migratory.

The helminthological examinations of mammals were carried out on the most numerous group Microchiroptera, which is very rich in species (57, 63, 64, 90, 138), a rare endemic species of the order Insectivora, *Solenodon cubanus* (143), of the order Rodentia some species of *Capromys* and synanthropic rodents of the genera *Rattus* and *Mus* (34, 56, 137).

A majority of papers on helminths and helminthoses of poultry were devoted not only to the domesticated, but also economically important free-living Galliformes (17, 23, 29, 31, 46, 47, 50, 59, 60, 89, 102, 103, 108). On the basis of these results the main helminthoses were then chosen for further epizootological studies. A series of papers dealt with a complex study of epizootology (including prevention and treatment) of cestodes of hens (68, 69, 76—79, 85, 86, 95). Two of the nematodoses, subulurosis (19, 25—28, 30, 37, 38, 67, 92, 129, 130) and dispharynxosis (66, 106), were studied in complex. Ascaridiosis and its treatment in hens (131), tetramerosis (96) and oxyspiruirosis (116) are the subjects of further papers. There are also papers, in which the questions of biology of helminths and epizootology of helminthoses in large-scale breeding of poultry are studied (48, 49, 55, 65, 91, 98, 99).

Numerous data were collected on the incidence of helminths in domestic animals,

as horses (62), cattle and sheep (132, 134) and pigs (97, 133). In addition to faunistical surveys, detailed studies concerned also the morphology and systematics of some groups of helminths, e.g. trematodes of the family Paramphistomatidae (101, 135), partly also their biology (119, 149) and the nematode *Mammomonogamus laryngeus* (111). The problem of cattle fasciolosis has been solved in complex (112—114, 119, 121, 122, 124—127). As far as dictyocaulosis was concerned, the methods of the diagnostic were improved (70—72) and the epizootology, pathogenicity and treatment of this disease were studied (73, 74, 82, 144). The development of one of the important pathogenic helminths, the nematode *Muellerius capillaris*, was studied under the Cuban conditions (142). The setariae, their incidence and pathogenicity were dealt with in three papers (115, 150, 151). The incidence, pathogenicity and epizootology of cattle helminthoses were the subject of further papers with a special bearing (100, 117, 118, 123, 146). A paper on the intermediate hosts of nematodes *Ascarops strongylina* and *Physocephalus sexalatus* (148) served as a basis of epizootological study of spirurids parasitizing pigs. Another paper was devoted to the study of the epizootology of *Ascaris suum* (104). The paper concerning the helminths of domestic dogs and cats (136) represents an important contribution to veterinary and medical sciences.

The ectoparasites of bats were studied in most detail. The systematical and faunistical studies concerned the families Argasidae (155, 156, 166, 170), Myobiidae (175, 178, 179), Spinturnicidae (173, 177) and others (174, 181—184). The study of parasitic Diptera of bats (191, 193) brought new taxonomic data. Attention was paid also to ectoparasites of synanthropic rodents (185).

Many papers were devoted to bird parasites, as nasal mites (162, 171, 180, 186), Hypoderidae (163), Hippoboscidae (190) and partly also feather mites (161, 168) and mesostigmatic mites (187). The knowledge on ticks parasitizing mammals, birds and reptilians was complemented (153, 154, 157, 159) and a survey of their fauna was prepared (164). Important data on the bionomy and taxonomy of synanthropic flies, especially Sarcophaginae (188, 189, 194) and on the fauna of Tabanidae (192) were obtained.

The authors studied also the bionomy of the tick *Boophilus microplus* (152, 169, 172) and prepared a survey of ectoparasites of various domestic animals and poultry (160, 165, 167).

The mycological works dealt with dermatophytic and keratinophilic fungi in the soil (195—198), some of which may infect even man and were found for the first time in the Caribbean region.

From the zoogeographic view, Cuba is characterized by a large number of endemic species from different systematical groups of vertebrates. It is therefore a valuable area for the study of some problems of geography of parasites. Papers on this subject were devoted to helminths of the definitive hosts of the orders Chiroptera (57) and Ecaudata (58), and mites parasitizing bats (176). The material collected served as a basis of systematical revisions and descriptions of more than 100 new taxons of helminths, mites, ticks and Diptera.

All above-mentioned and other results represent a significant contribution to theoretical parasitology as a scientific discipline. The results of the ecological and epizootological studies were successfully applied in veterinary medicine and animal production of the Cuban Socialist Republic. The Czechoslovak parasitological school contributed fundamentally also to the education of a new scientific generation of Cuban parasitologists with biological and veterinary specialization.

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Abbreviations used: *Proc. Symp. Liblice* = Proceedings of Papers reported on the Symposium on Research in Tropical Vet. Med., held at Liblice, Czechoslovakia September 8 and 9, 1970. *Proc. 2nd Symp. Liblice* = Proceedings of the 2nd Symposium on Research in Tropical Vet. Med. held at Liblice, Czechoslovakia, October 4 and 5, 1973.

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Received 3 June 1975.

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